

AERO DHCPv6 Prefix Delegation Implications

IETF94 DMM Working Group

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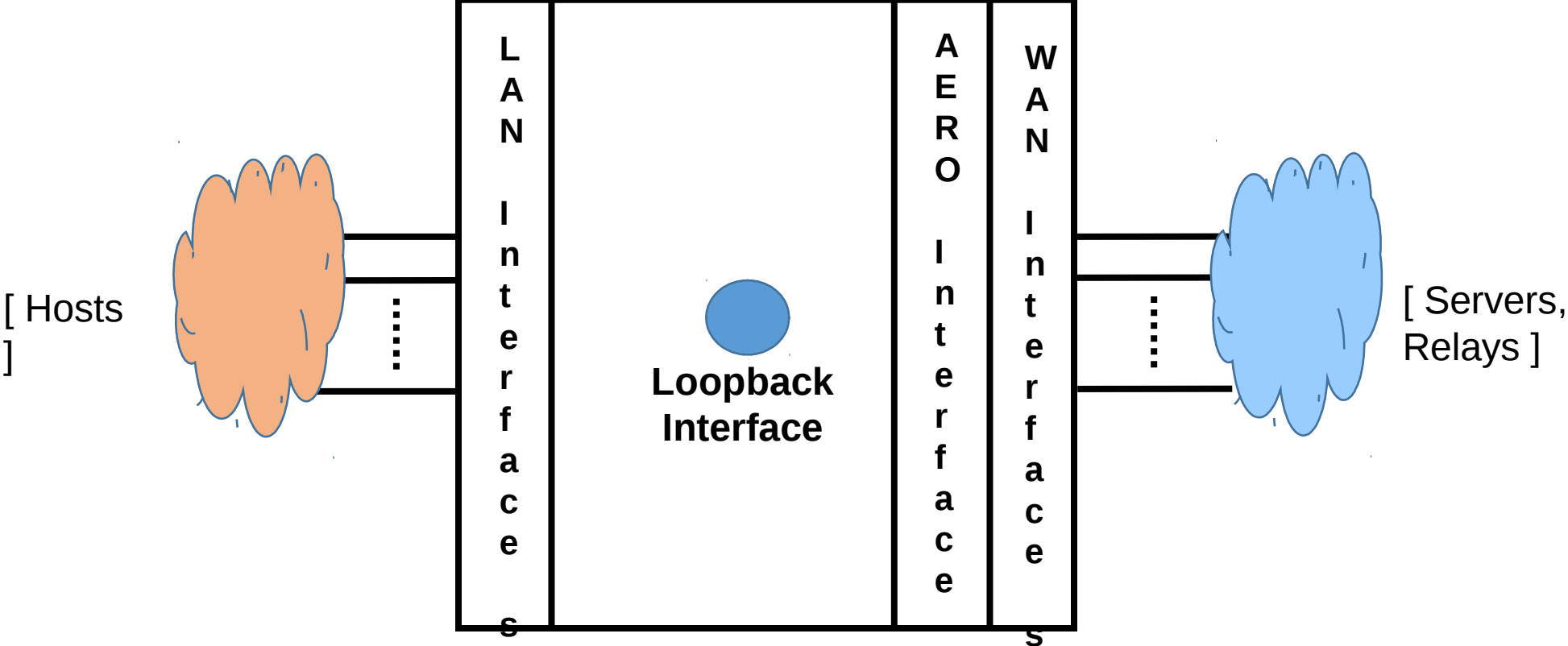
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<https://datatracker.ietf.org/doc/draft-templin-aerolink>

AERO Client Operation

- Client discovers IP address(es) of nearby Server(s)
- Client sends encapsulated DHCPv6 Prefix Delegation (PD) request to Server via the AERO interface
- Server delegates prefix and:
 - Establishes AERO interface neighbor cache entry for Client
 - Announces route for delegated prefix in AERO BGP routing instance
 - Sends DHCPv6 PD reply to Client
- **Client receives delegated prefix, and can now provision the prefix according to its needs**

AERO Client Model



Client as Host

- Client has IP forwarding turned off (strong end system)
- Client configures IPv6 addresses from delegated prefix and assigns them to the AERO interface
 - Can configure as many as it likes (e.g., one address per application, etc.)
- Client assigns prefix to a loopback interface to black-hole the unused portions of the prefix
- **DAD not necessary on AERO interface, since prefix is entirely owned by the Client**

Client as Router

- Client has IP forwarding turned on (pure router)
- Client assigns prefixes to downstream-attached networks
 - /64s can be assigned directly to downstream links
 - Client can act as a DHCPv6 server to provide address/prefix delegations to downstream-attached DHCPv6 clients
 - Client can advertise off-link prefixes to nodes on downstream-attached links as a form of SLAAC-based prefix delegation
 - Client is default router for downstream-attached networks
- **DAD not necessary on AERO interface, since prefix is entirely owned by the Client**
- **DAD necessary on any downstream-attached link that assigns a /64 prefix the same as for any link**

Client as a Hybrid Host/Router

- Client has IP forwarding turned on (weak-end system)
- Client configures IPv6 addresses from delegated prefix and assigns them to the AERO interface
 - Can configure as many as it likes
- Client assigns rest of prefix on downstream-attached link
- **DAD not necessary on AERO interface, since prefix is entirely owned by the Client**
- **DAD necessary on downstream-attached link, PLUS Client must defend addresses assigned to the AERO interface (RFC7278)**

Summary

- AERO supports natural multi-addressing
- Addresses are abundant – might as well use as many as possible
- DAD not necessary, since network guarantees that the delegated prefix will not be given to any other node (otherwise, there would be bigger problems than just address duplication)
- Tension between DHCPv6 PD and SLAAC-based pseudo-PD